

(19) World Intellectual Property Organization  
International Bureau



10 DEC 2004



(43) International Publication Date  
18 December 2003 (18.12.2003)

PCT

(10) International Publication Number  
**WO 03/103604 A2**

(51) International Patent Classification<sup>7</sup>:

**A61K**

(21) International Application Number: PCT/US03/18202

(22) International Filing Date: 9 June 2003 (09.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/387,340 10 June 2002 (10.06.2002) US  
60/451,804 3 March 2003 (03.03.2003) US

(71) Applicant (for all designated States except US): **APPLIED RESEARCH SYSTEMS ARS HOLDING N.V** [NL/NL]; Pietermaai 15, Curacao (AN).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ARALDI, Gian, Luca** [IT/US]; 22 Hillview Lane, Plymouth, MA 02360 (US). **REDDY, Adulla, P.** [US/US]; 32 Bubbling Brook Road, Walpole, MA 02081 (US). **ZHAO, Zhong** [CN/US]; 15 Red Barn Road, Wayland, MA 01778 (US). **MCKENNA, Sean, D.** [US/US]; 679 Lincoln Street, Duxbury, MA 02332 (US). **BAO, Bagna** [US/US]; 40 Lincoln Road, Sharon, MA 02067 (US).

(74) Agents: **SMITH, DeAnn, F. et al.**; Lahive & Cockfield, LLP, 28 State Street, Boston, MA 02109 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GAMMA LACTAMS AS PROSTAGLANDIN AGONISTS AND USE THEREOF

(57) Abstract: 1,2-substituted 5-pyrrolidinone compounds are provided, and methods of treatment and pharmaceutical composition that utilize or comprise one or more such compounds. Compounds of the invention are useful for a variety of therapies, including treating or preventing preterm labor, dysmenorrhea, asthma, hypertension, infertility or fertility disorder, undesired blood clotting, preeclampsia or eclampsia, an eosinophil disorder, sexual dysfunction, osteoporosis and other destructive bone disease or disorder, renal dysfunction, an immune deficiency disorder, dry eye, ichthyosis, elevated intraocular pressure, sleep disorder, or gastric ulcer, inflammatory disorders and other diseases and disorders associated with the prostaglandin family of compounds.



WO 03/103604 A2